LSA

LSA ASSOCIATES, INC.
20 EXECUTIVE PARK, SUITE 200
IRVINE, CALIFORNIA 92614

949.553.0666 TEL
949.553.8076 FAX

BERKELEY
CARLSBAD
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April 1, 2010

Ms. Arianne Preite
Caltrans District 12
3337 Michelson Drive, Suite 380
Irvine, CA 92612-8894
(949) 724-2704

Subject: Revised Final Biological Construction Monitoring and Impact Assessment Report for the Bolsa Chica Roadway Embankment Reconstruction Project;
Coastal Development Permit Emergency Permit No. 5-09-131-G;
United States Army Corps of Engineers Emergency Permit (No. SPL-2009-00531-SCH);
United States Fish and Wildlife Service Informal Section 7 Consultation, FWS-OR-09B0048-09F1004;
Request by NOAA's NMFS (email dated July 15, 2009)

Dear Ms. Preite:

This letter serves as an update to the Final Biological Construction Monitoring and Impact Assessment Report for services that LSA Associates, Inc. (LSA) has performed at the State Route 1 (SR-1) Bolsa Chica Roadway Embankment Reconstruction Project (project). This report details the biological monitoring performed during repair of the damaged portion of the roadway and the assessment of postconstruction impacts. Ortiz Enterprises, Inc. performed all construction work. LSA provided biological monitoring during construction activities as required by the associated permit conditions. Mitigation for impacts to jurisdictional areas within this project will be implemented by others, and reports on their progress will be issued separately.

PROJECT PURPOSE AND DESCRIPTION

The northbound segment of SR-1 is subjected to landslides, erosion, and flooding during storms and/or high tide conditions. The roadway embankment of the northbound lane began eroding at an alarming rate during spring 2009. On March 5, 2009, the California Department of Transportation (Caltrans) closed half the shoulder and installed a protective barrier because the roadway began sloughing off into the adjacent estuary. Peak high tides in late June 2009 and subsequent tide/scour action have caused unforeseen and rapid loss of sections of roadway pavement, removing the lateral support and undermining approximately 475 linear feet of SR-1 that is heavily used by summer recreation and cycling traffic. The loss of pavement and the unstable embankment condition affect the safety of the motoring, cycling, and pedestrian public.

To prevent or mitigate loss or damage to life, health, property, or essential public services, discussions were held to elevate the project to emergency status on July 1, 2009. On July 14, 2009, the approved Director's Order was issued and the project was awarded on July 20, 2009. The project's emergency permits are listed in the subject line above.

The purpose of the project is to protect the roadway embankments on SR-1 by restoring the partially washed out highway embankment/shoulder pavement on the northbound lane. This emergency project will restore a stable driving surface as well as a shoulder that is used by bicyclists and pedestrians. The emergency project will preserve the publicly owned and operated facility in a safe, efficient, and continuously usable condition, thereby maintaining coastal access and mobility for the traveling public. It will also protect the adjacent estuarine environment from sloughing of the roadway embankment and the deposition of road base and asphalt rubble.

Project construction occurred between July 27, 2009, and August 7, 2009, from approximately 6:00 a.m. to 6:00 p.m. during weekdays only. Initial project activities included potholing for utility verification and installation of detour signs. Between July 28 and July 31, 475 feet (ft) of sheet piling was installed to 30 ft in depth, approximately 5 ft from the edge of the asphalt shoulder. Sheet piles were then trimmed and backfilled with sand to a level equal to existing shoulder elevations. During the second week of construction, final trimming and backfilling occurred. The damaged shoulder of the road was then removed and paved.

The project required a total of 10 cubic yards (cy) of excavation and 45 cy of backfill. Topsoil was not salvaged or stored on site due to lead contamination. All excavated topsoil (i.e., 10 cy) was transported to Chemical Waste Management, 35251 Old Skyline Road, Kettleman City, CA 93239.

Following completion of sheet pile installation, a temporary K-rail was installed on August 21, 2009, in order to bring SR-1 into compliance with Caltrans safety specifications. Fill (i.e., sand) was displaced during installation activities and then removed manually with shovels from adjacent areas of vegetation in the presence of a biological monitor on August 26, 2009. The temporary K-rail will ultimately be removed and replaced with a metal-beam guardrail. Installation of the metal-beam guardrail is not a part of the emergency project and will be addressed under separate permits.

PROJECT LOCATION AND LIMITS OF WORK

The project is located in the City of Huntington Beach, in Orange County, within the jurisdiction of Caltrans District 12 (District) (Figures 1 and 2; all figures attached). The project is located in Township 5 South, Range 11 West, Section 29 of the *Seal Beach, California* United States Geological Survey (USGS) topographic quadrangle map. The elevation is approximately 5 to 8 ft above mean sea level (amsl). Protective improvements were proposed along SR-1, also known as Pacific Coast Highway, between Warner Avenue and Seapoint Avenue. Post miles (PM) for the project impact zone, including areas temporarily or permanently impacted, range from PM 28.7 to PM 29.7 (Station Nos. 225.7 through 254.6). Pre- and postconstruction representative site photos are included as Figure 3.

The grading and permit limits were surveyed in the field prior to the commencement of construction activities at the SR-1 Bolsa Chica Roadway Embankment. All work was conducted within these designated limits. Please refer to Figure 4 for a depiction of project impact limits as well as the designated Biological Study Area (BSA) and Wildlife Study Area (WSA).

BIOLOGICAL MONITORING

LSA Biologists Corey Knips and David Muth provided biological monitoring services on site during all construction activities from July 27 to August 7, 2009, and during the sand removal activities on August 26, 2009.

No federally listed species or their sign were observed on site or within the vicinity of construction activities during project construction. No permanent or temporary adverse impacts occurred to the surrounding native vegetation or wildlife as a result of project activities. Please see the impacts discussions within the Jurisdictional Areas, Special-Status Animal Species, and Special-Status Plant Species sections below for additional information.

The following sections discuss project compliance with avoidance/minimization measures, weed abatement measures, recommended noise measurements, and water quality sampling.

Avoidance and Minimization Measures

All emergency project activities were conducted in compliance with recommended avoidance and minimization measures, and no incident reports were issued. The following list describes the avoidance and minimization measures included as conditions of the project's emergency permits and Informal Section 7 Consultation:

- Visible construction signs, fencing, stakes, and/or flags to mark work areas and to limit access in adjacent sensitive habitats
- Complete avoidance of the California Department of Fish and Game (CDFG) parking lot southeast of the project limits
- Preconstruction surveys for listed nesting and breeding birds
- Development and implementation of an employee education program regarding sensitive biological resources and avoidance/minimization measures
- Limited duration of disturbance due to noise and activity in the project area through efficient labor
- Full-time biological monitoring during construction
- Use of best management practices (BMPs) (i.e., silt or turbidity curtains) to manage sediment during construction
- Use of standard BMPs for staging or vehicle repair, fuel spill cleanup, and disposal of oil, gasoline, and other toxic substances
- Use of minimal impact construction equipment (e.g., vibrating hammer or hydraulic press) during construction
- Work staged and conducted from the roadway to the maximum extent possible; storage of equipment/materials shall occur within paved areas only; and no machinery or construction materials that are not essential for project implementation shall be allowed at any time in the Bolsa Bay waters

- Use of minimal impact construction methods (e.g., efficient labor) during construction
- Prohibiting birds from perching on construction equipment
- Proper disposal of spoils, rubble, and construction-related trash
- Prohibiting the feeding of wildlife, use of harmful chemicals, and on-site contractor pets
- Avoidance of western snowy plover critical habitat

Weed Abatement

In compliance with Executive Order (EO) 13112, a weed abatement program was developed to minimize the importation of nonnative plant material during and after construction. Eradication strategies will be employed should an invasion occur. This program includes the following weed abatement measures:

- During construction, the construction contractor shall inspect and clean construction equipment at the beginning and end of each day and prior to transporting equipment from one project location to another.
- During construction, soil and vegetation disturbance will be minimized to the greatest extent feasible.
- During construction, soil/gravel/rock will be obtained from weed-free sources.
- Only certified weed-free straw, mulch, and/or fiber rolls will be used for erosion control.
- After construction, if applicable, affected areas adjacent to native vegetation would be revegetated with plant species approved by the District Biologist that are native to the vicinity.
- After construction, if applicable, all revegetated areas will avoid the use of species listed in California Invasive Plant Council's (Cal-IPC) California Invasive Plant Inventory that have a high or moderate rating.
- After construction, if applicable, erosion control and revegetation sites will be monitored for 2 to 3 years to detect nonnative species prior to the establishment of the native vegetation.
- Eradication procedures (e.g., spraying and/or hand weeding) will be outlined should an infestation occur. The use of herbicides will be prohibited within and adjacent to native vegetation, except as specifically authorized and monitored by the District Biologist.

Noise Measurements

The biological monitor also provided noise measurements as suggested in the Informal Section 7 Consultation. Four 15-minute noise measurements were conducted on Monday, July 27, 2009, to determine noise levels before and during construction activities for the project area. Two additional longer measurements were conducted on July 28, 2009, to determine hourly noise levels during sheet-piling activities. Northbound traffic on SR-1 was rerouted during all measurements, so ambient noise levels were not typical for the area due to irregular traffic conditions.

Two locations were used for all six measurements: M-1 was 3 ft out from the northbound shoulder near Station No. 246+00; M-2 was across Bolsa Bay from the project site, near the end of the dike (Table A). The average equivalent continuous noise level (L_{eq}) for the two measurements along the road (location M-1) was 66.8 A-weighted decibels (dBA), varying only 0.6 dBA from the 6:20 a.m. measurement to the 8:45 a.m. measurement (Table B). Location M-2 had varying sound levels due to different construction activities, but while sheet-piling activities were in progress, M-2d had an hourly L_{eq} of 62.6 dBA (Table C). Bird nest surveys conducted prior to construction (Natural Environment Study [NES], LSA Associates, Inc., August 2009) covered areas within 500 ft of the project area and also included all areas that were later determined to exceed hourly sound levels of 60 dBA L_{eq}. No bird nests were found during these surveys. In addition, throughout construction activities, the biological monitor looked for any signs of bird nests in the areas mentioned above, with negative findings. General bird activity was also monitored during construction, with no observed impacts due to construction noise.

Table A: Physical Location of Noise Level Measurements

Monitor No.	Location Description	Noise Sources	Comments
M-1a	3 ft out from the NB shoulder near Station No. 246+00	Light traffic on SB SR-1 (NB is closed)	No construction activities.
M-1b	3 ft out from the NB shoulder near Station No. 246+00	Light traffic on SB SR-1 (NB is closed)	No construction activities.
M-2a	Across Bolsa Bay from the project site, near the end of the dike	Light traffic on SB SR-1 (NB is closed)	No construction activities.
M-2b	Across Bolsa Bay from the project site, near the end of the dike	Potholing (56–63 dB); light traffic on SB SR-1 (NB is closed)	Potholing occurred during approximately 80 percent of the measurement, and only occurred on this day (7/27/2009).
M-2c	Across Bolsa Bay from the project site, near the end of the dike	Sheet piling (63–77 dB); light traffic on SB SR-1 (NB is closed)	Workers had trouble getting one of the sheet piles into the ground, resulting in much higher decibel levels than usual (26-minute measurement).
M-2d	Across Bolsa Bay from the project site, near the end of the dike	Sheet piling (63–70 dB); light traffic on SB SR-1 (NB is closed)	1-hour measurement during typical sheet-piling activities.

Source: LSA Associates, Inc. 2009
dB = decibels SB = southbound
ft = feet SR-1 = State Route 1
NB = northbound

Table B: Short-Term Ambient Noise Monitoring Results

Monitor No.	Date	Start Time	Duration	dBA L_{eq}
M-1a	7/27/2009	6:20 a.m.	15 minutes	67.1
M-1b	7/27/2009	8:45 a.m.	15 minutes	66.5
M-2a	7/27/2009	6:50 a.m.	15 minutes	53.8

Source: LSA Associates, Inc. 2009.
dBA = A-weighted decibels
L_{eq} = equivalent continuous noise level

Table C: Short-Term Construction Noise Monitoring Results

Monitor No.	Date	Start Time	Duration	dBA L_{eq}
M-2b	7/27/2009	9:10 a.m.	15 minutes	60.8
M-2c	7/28/2009	9:20 a.m.	26 minutes	68.4
M-2d	7/28/2009	9:50 a.m.	1 hour	62.6

Source: LSA Associates, Inc. 2009.
dBA = A-weighted decibels
L_{eq} = equivalent continuous noise level

Water Quality Sampling

The biological monitor also provided water quality sampling as required by the United States Army Corps of Engineers (Corps) Regional General Permit (RGP) No. 63 for Emergency Repairs.[1] A Water Quality Sampling Plan was developed and made available on site for inspection during the duration of project activities in compliance with conditions specified in Corps RGP No. 63. As specified in the Water Quality Sampling Plan, a violation to the specified standards would have triggered a written report to Corps Regional Board staff within 24 hours of discovery. However, no violations to water quality conditions occurred.

All water quality sampling was taken in triplicate and at a distance of approximately 10 ft from the shoreline. During days that included sheet-piling activities, water quality samples were taken approximately 50 ft downstream from the pile driver, with samples taken before any construction activities began, approximately 30 minutes after sheet piling began, and approximately 30–60 minutes before sheet piling ended for the day. If a noticeable change had occurred to the color or clarity of the receiving water, additional measurements would have been collected; however, no noticeable changes to color or clarity occurred during the course of the project activities.

The following conditions were tested:

- **Dissolved Oxygen.** The lowest dissolved oxygen level that was recorded during project activities was 5.38 milligrams per liter (mg/L); therefore, dissolved oxygen content did not decrease below the 5.0 mg/L minimum threshold that the Santa Ana Regional Water Quality Control Board (RWQCB) special requirements specified in the permit.
- **pH.** Tested percentage of hydrogen (pH) levels ranged from 7.76 to 8.04 during project activities. This was well within the acceptable range of 6.5 to 8.5 pH that the Santa Ana RWQCB special requirements specified in the permit.
- **Turbidity.** The background natural turbidity, measured in nephelometric turbidity units (NTUs), was recorded each day before construction began to establish a daily baseline measurement for turbidity. All turbidity measurements during construction activities were compared to these daily initial readings, which ranged from a decrease of 39 percent to an increase of 7 percent and therefore did not exceed the 20 percent maximum increase specified in the permit (Table D).

[1] Water quality sampling requirements were provided by the Santa Ana RWQCB and included in Corps RGP No. 63.

Table D: Water Sampling Table

Date	Time	DO (mg/L) Triplicate Measure			Avg	pH Triplicate Measure			Avg	Turbidity Triplicate Measure (NTU)			Avg (NTU)	Change in Turbidity (%)
7/28/09	* 6:45 AM	5.96	6.05	6.17	6.06	7.73	7.79		7.76	4.6	5.5	5.5	5.2	
7/28/09	8:10 AM	6.21	6.01	5.73	5.98	7.80	7.80	7.80	7.80	3.4	3.6	4.5	3.8	-26%
7/28/09	4:30 PM	6.56	6.80	7.03	6.80	7.90	7.92	7.92	7.91	4.0	4.6	4.7	4.4	-15%
7/29/09	* 6:15AM	6.00			6.00	7.91			7.91	5.0			5.0	
7/29/09	* 6:30 AM	5.90	6.13	5.82	5.95	7.89	7.90	7.90	7.90	4.1	4.6	4.3	4.3	
7/29/09	7:40 AM	5.98	5.88	5.92	5.93	7.88	7.88	7.87	7.88	5.1	4.7	4.1	4.6	7%
7/29/09	3:52 PM	6.14			6.14	7.89			7.89	5.2			5.2	4%
7/29/09	5:30 PM	6.78	6.97	6.94	6.90	7.92	7.93	7.94	7.93	4.1	4.4	5.2	4.6	-9%
7/30/09	* 6:05 AM	6.17	6.01	6.03	6.07	7.90	7.90	7.90	7.90	**	**	**	5.2	
7/30/09	* 6:20 AM	6.12	6.19	6.17	6.16	7.89	7.89	7.89	7.89	**	**	**	5.2	
7/30/09	7:01 AM	6.15	6.18	6.14	6.16	7.88	7.90	7.91	7.90	4.9	4.8	5.2	5.0	-4%
7/30/09	6:15 PM	6.36			6.36	7.98			7.98	4.1			4.1	-21%
7/30/09	6:24 PM	6.38	6.53	6.48	6.46	7.99	7.99	7.99	7.99	3.9	2.9	3.4	3.4	-34%
7/31/09	* 6:10 AM	5.38			5.38	7.91			7.91	5.8			5.8	
7/31/09	* 6:20 AM	5.56	5.58	5.85	5.66	7.91	7.89	7.91	7.90	5.1	5.9	5.4	5.5	
7/31/09	4:40 PM	5.56	5.62	5.87	5.68	7.90	7.94	7.94	7.93	4.1	3.4	3.1	3.5	-39%
8/7/09	3:55 PM	6.18	6.07	6.16	6.14	8.01	8.03	8.04	8.03	3.2	2.3	2.3	2.6	
8/7/09	4:15 PM	6.85	6.47	6.61	6.64	8.05	8.04	8.04	8.04	2.4	4.6	2.0	3.0	
				Maximum	6.90			**Maximum**	8.04			**Maximum**	5.80	7%
				Minimum	5.38			**Minimum**	7.76			**Minimum**	2.60	-39%

* Indicates daily background measurements prior to construction.

** On the morning of July 30, 2009, turbidity readings were unusually low; therefore, the average of all background natural turbidity measurements was used as a baseline on this day.

Avg = average
DO = dissolved oxygen
mg/L = milligrams per liter
NTU = nephelometric turbidity units
pH = percentage of hydrogen

IMPACT ASSESSMENT

LSA biologists Corey Knips and Kristen Yee conducted an assessment of permanent impacts at the project impact area on August 11, 2009. Methods to determine impacts included measuring the length and width of impacts that occurred during sheet-piling and roadway embankment stabilization activities. Project impacts for subsequent installation of the temporary K-rail were assessed using current photos, revised impact limits, and geographic information system (GIS) software.

The length of permanent impacts (482 ft) was determined using a measuring wheel. The width of permanent impacts was determined by measuring the outside edge of the sheet pile to the edge of the road every 40 ft using a tape measure and a measuring wheel. Also, it was determined that the new pavement stretched approximately 11 inches wider on average than the old pavement. The width was then averaged from these measured points, including the 11 inches of extra pavement (width average: 6.3 ft).

In accordance with conditions described in the California Coastal Commission (CCC) Emergency Permit, the site was also assessed for erosion during the August 11, 2009, site visit. No erosion was observed or anticipated. A summary of results and recommendations associated with the monthly or

bimonthly assessment of erosion will be provided in the follow-up permit application for a regular Coastal Development Permit (CDP).

Jurisdictional Areas

Two hydrological features (Inner Bolsa Bay and Outer Bolsa Bay) were identified within the BSA. The BSA includes a total of 1.91 acres (ac) of waters subject to Corps jurisdiction pursuant to Section 10 of the Rivers and Harbors Act. These areas of Section 10 Corps jurisdiction include deepwater aquatic (1.35 ac) and wetland waters of the United States (0.56 ac). Corps jurisdiction pursuant to Section 404 of the Clean Water Act (CWA) includes the Section 10 waters plus an additional 0.69 ac for a total of 2.60 ac. These areas of Section 404 Corps jurisdiction include deepwater aquatic habitat (1.54 ac) and wetland waters of the United States (0.96 ac). For the purpose of the project Jurisdictional Delineation, all areas subject to RWQCB jurisdiction coincide with areas subject to Corps jurisdiction. The BSA also includes a total of 3.55 ac subject to CCC jurisdiction as wetlands pursuant to the California Coastal Act (CCA). All areas of Corps jurisdiction are contained entirely within areas subject to CCC jurisdiction. There are no areas within the BSA subject to direct permit jurisdiction of the CDFG. However, the CDFG is a stakeholder through its management of the Bolsa Chica Ecological Reserve and as an advisor to the CCC. The locations of sample plots and the potential jurisdictional areas are provided on Figure 4.

Subsequent to the issuance of the Biological Construction Monitoring and Impact Assessment Report, additional impacts were identified.

Initial impacts resulted from installation of the sheet piles. Subsequent impacts occurred as a result of the placement of a temporary K-rail barrier in compliance with Caltrans safety specifications. This temporary K-rail will ultimately be removed and replaced with a metal-beam guardrail.

Total project impacts for installation of the sheet piles and temporary K-rail,[1] are as follows: 0.117 ac of potential CCC jurisdiction will be permanently impacted by project activities. This area includes impacts to 0.002 ac of potential Corps jurisdiction. In addition, 0.005 ac of potential CCC jurisdiction will be temporarily impacted by project activities. No temporary impacts to potential Corps jurisdiction will occur. A summary of proposed and final project impacts to potential jurisdictional areas is provided in Table E.

Vegetation Communities

A total of 10 vegetation communities were identified within the BSA (i.e., native dune mat, estuarine wetland/open water, invaded dune mat, invaded ice plant dune mat, dune scrub, coastal scrub, bare ground, disturbed, transportation/road, and exotic annual grassland). Four of these were identified as natural community groups of special concern (i.e., native dune mat, estuarine wetland/open water, dune scrub, and coastal scrub).

[1] Impacts resulting from the installation of the temporary K-rail are assumed to be permanent for purposes of this assessment due to the eventual replacement with a permanent metal-beam guardrail.

Table E: Project Effects to Jurisdictional Areas – Proposed and Final Impacts (acres)

Project Impacts	CCC Wetland Waters		CCC/Corps Wetland Waters[1]		CCC/Corps Deepwater Aquatic Habitat[2]		Total Impacts	
	Perm	Temp	Perm	Temp	Perm	Temp	Perm	Temp
Proposed Impacts (Emergency Project Only)	0.080	0.000	0.010	0.00	0.010	0.00	0.100	0.000
Final Impacts (Including Project Revisions)	0.115	0.005	0.000	0.00	0.002	0.00	0.117	0.005

[1] A total of 0.001 ac of proposed impacts to Corps wetland waters is also designated as a proposed impact to Corps Section 10 waters.

[2] The entire area (i.e., 0.002 ac) of final impacts to Corps deepwater aquatic habitat is also designated as final impacts to Corps Section 10 waters.

ac - acre
CCC = California Coastal Commission
Corps = United States Army Corps of Engineers

As shown in Table F, the project was proposed to result in direct permanent effects to approximately 0.094 ac of estuarine/open water habitat through disturbance and/or removal of existing vegetation. Final project impacts to estuarine/open water habitat increased to 0.102 ac of permanent impacts and 0.004 ac of temporary impacts as a result of project revisions (Figure 5). Permanent impacts to approximately 0.517 ac of transportation/road and temporary impacts to approximately 3.507 ac of transportation/road were proposed by the project. As a result of project revisions, permanent impacts decreased to 0.094 ac; however temporary impacts increased by 0.002 ac resulting in a total of 3.509 ac of temporary impacts to transportation/road. Final project impacts to bare ground increased by 0.002 ac of permanent impacts resulting in a total of 0.003 ac of permanent impacts to bare ground. No other permanent, temporary, or indirect impacts to vegetation occurred.

Table F: Project Effects to Vegetation Communities – Proposed and Final Impacts (acres)

Vegetation Community	Proposed Impacts[1] (Emergency Project Only)		Final Impacts[2] (Including Project Revisions)	
	Permanent	Temporary	Permanent	Temporary
Bare Ground	0.001	0.000	0.003	0.000
Estuarine Wetland/Open Water	0.094	0.000	0.102	0.004
Transportation/Road	0.517[3]	3.507	0.094	3.509

[1] Source: Natural Environment Study, LSA Associates, Inc., August 2009.

[2] Represents proposed impacts from project refinements in addition to actual impacts from emergency project.

[3] A majority of permanent impacts to transportation/road areas proposed as a part of the emergency project were avoided during implementation of the emergency project.

Special-Status Plant Species

Thirty-three species of special-status plants occur within the vicinity of the BSA and six special-status plant species have been identified in near proximity to the BSA (California Natural Diversity Database [CNDDB] 2009). Occurrences of two of the six special-status plant species (estuary seablight and coast woolly-heads) were located within the BSA and are discussed further below.

Figure 6 shows the documented occurrences of special-status plant species within the near vicinity of the BSA. Nine other special-status plant species (Coulter's saltbush, south coast saltscale, Santa Barbara morning glory, Lewis' evening primrose, estuary seablight, coast woolly-heads, southern tarplant, Los Angeles sunflower, and Coulter's goldfields), including those listed by the California Native Plant Society (CNPS) as List 1B, 2, 3, and 4 with suitable habitat, also occur within the BSA but were not found during subsequent botanical surveys. In addition, other special-status wildlife species with the potential of occurring within the BSA were also discussed in the NES.[1]

All individual coast woolly-heads lie outside of the work area for the roadway embankment project. Therefore, no impacts to coast woolly-heads occurred during the emergency project.

The location of the estuary seablight population displayed on Figure 6 is approximate due to the scale of the graphic. No impacts to estuary seablight occurred during sheet piling or temporary K-rail installation. Approximately 7.5 percent of the estuary seablight population (approximately 60–70 individuals) was proposed to be permanently impacted from the installation of a metal-beam guardrail. However, the proposed construction limits associated with the metal-beam guardrail have since been reduced and no longer impact the estuary seablight population.

Special-Status Animal Species

A total of 15 of the 60 special-status animal species with the potential of occurring within the BSA are federal- and/or State-listed endangered or threatened, proposed endangered or threatened, or are considered to be a fully protected species by the State of California. However, suitable habitat for nine of these species is not present within the BSA. In addition, other special-status wildlife species with the potential of occurring within the BSA were also discussed in the NES.[1] Figure 7 shows the documented occurrences of special-status animal species within the near vicinity of the BSA.

Nine special-status animal species have the potential to occur in the BSA where suitable habitat is present (burrowing owl, brandt, western snowy plover, California black rail, Belding's Savannah sparrow, California brown pelican, light-footed clapper rail, black skimmer, and California least tern). Five of these nine species (Belding's savannah sparrow, California brown pelican, light-footed clapper rail, black skimmer, and California least tern) were observed in either the BSA or WSA during preconstruction surveys. Figure 8 shows several nesting site occurrences within the near vicinity of the BSA.

No special-status animal species were observed during project construction, and no direct impacts to special-status animal species occurred as a result of project activities. As described above, project impacts permanently affected a total of 0.102 ac of estuarine/open water habitats. These losses of potential habitat have potential to cause both temporary and indirect impacts to special-status animal species.

[1] Full list of special-status species is available upon request.

PROPOSED COMPENSATORY MITIGATION

At a mitigation ratio of 4:1, 0.468 ac of habitat creation, restoration, or enhancement would be required to compensate for permanent project impacts to Corps and CCC jurisdiction. Three options were proposed to the resource agencies to mitigate for project impacts:

1. A 5-year giant reed (*Arundo donax*) removal program at Beach Boulevard/SR-1 with supplemental planting and seeding. The total acreage of giant reed to be removed is 0.70–0.75 ac.
2. Habitat restoration or enhancement directly within the Bolsa Chica Ecological Reserve through in-lieu fees to CDFG, or through implementation of a project in cooperation with CDFG. This option would potentially provide an improvement to on-site conditions directly or indirectly affected by project activities.
3. Contribution of in-lieu fees to Huntington Beach Wetlands Conservancy (hereafter referred to as Conservancy) to support its current Magnolia Marsh Project. The Conservancy confirmed that it would accept in-lieu fees if offered.

Based on agency response, the 5-year giant reed removal program at Beach Boulevard/SR-1 was selected as the final mitigation approach. Details of this approach are included in the project's Final Habitat Mitigation and Monitoring Plan (HMMP), which is currently under preparation.

SUMMARY/CONCLUSION

- All emergency work was carried out within the designated project limits and in compliance with CDP Emergency Permit No. 5-09-131-G; Corps Emergency Permit (No. SPL-2009-00531-SCH); and United States Fish and Wildlife Service (USFWS) Informal Section 7 Consultation, FWS-OR-09B0048-09F1004. This monitoring report and impact assessment is provided in compliance with conditions of the aforementioned emergency permits and Informal Section 7 Consultation.
- Following completion of the emergency project, a temporary K-rail was installed on August 21, 2009, in order to bring SR-1 into compliance with Caltrans safety specifications. The temporary K-rail will ultimately be removed and replaced with a metal-beam guardrail. Installation of the metal-beam guardrail is not a part of the emergency project and will be addressed under separate permits.
- All project activities were conducted in compliance with recommended avoidance and minimization measures and weed abatement measures, and no incident reports were issued. The project did not affect the nesting or breeding behavior of birds, and no violations to water quality conditions occurred.
- A total of 0.117 ac of potential CCC jurisdiction was permanently impacted by emergency project activities and subsequent design revisions. This area includes impacts to 0.002 ac of potential Corps jurisdiction. In addition, 0.005 ac of potential CCC jurisdiction has been temporarily impacted by project activities. No temporary impacts to Corps jurisdiction occurred as a result of project activities.
- Final permanent project impacts to potential CCC jurisdiction increased by 0.017 ac as compared to the proposed project, while final temporary impacts increased by 0.005 ac. Final permanent project impacts to potential Corps jurisdiction decreased by 0.008 ac.

- Final permanent impacts to estuarine/open water habitat increased by 0.008 ac, for a total of 0.102 ac of permanent impacts. Final temporary impacts to estuarine/open water habitat increased by 0.004 ac, for a total of 0.004 ac of temporary impacts. These impacts occurred during the nesting season in the presence of a biological monitor with no incidents of concern.
- No special-status animal species were observed during project construction, and no direct impacts to special-status animal species occurred as a result of project activities. The proposed and final impacts to vegetation described above (estuarine/open water habitat) also describe the impacts to potential habitat for these species. These losses of potential habitat have the potential to cause both temporary and indirect impacts to special-status animal species.
- Three conceptual habitat mitigation approaches were considered, including: (1) giant reed removal at Beach Boulevard/SR-1, (2) habitat creation or enhancement within the Bolsa Chica Ecological Reserve, and/or (3) in-lieu fees to the Huntington Beach Wetlands Conservancy. A 5-year giant reed removal program at Beach Boulevard/SR-1 was selected as the final mitigation approach and will be detailed in the project's final HMMP.

If you have any questions, please feel free to contact me at (949) 553-0666.

Sincerely,

LSA ASSOCIATES, INC.

Angela Roundy
Senior Biologist

Attachments: Figures 1 through 8

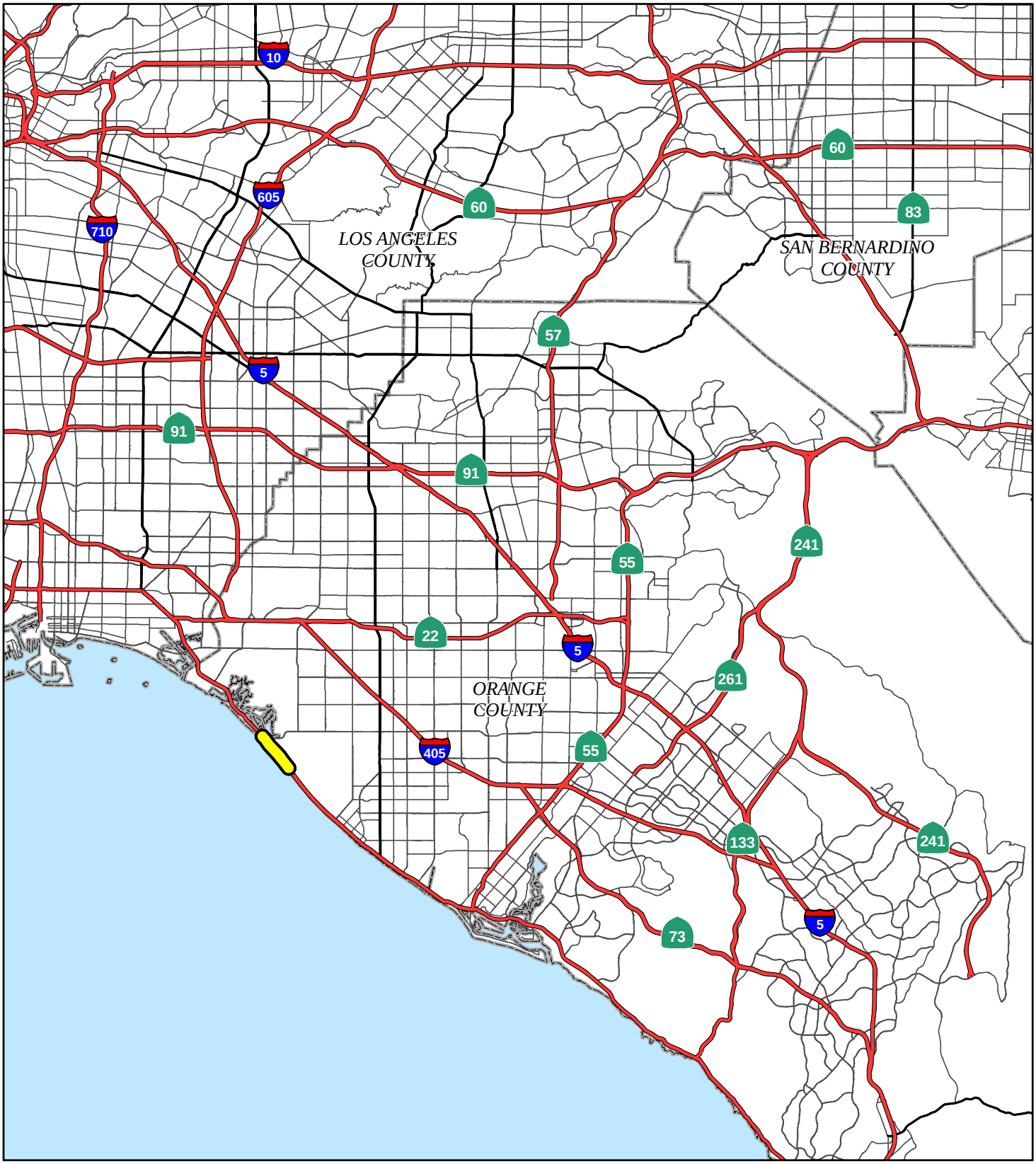

FIGURE 1

LEGEND

Project Location

N

0 2.5 5

Miles

SOURCE: Thomas Bros, (2007).

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SR-1 Bolsa Chica Roadway Embankment Reconstruction Project

Project Vicinity Map

12-ORA-1 PM 28.7/29.7
EA 0K0100

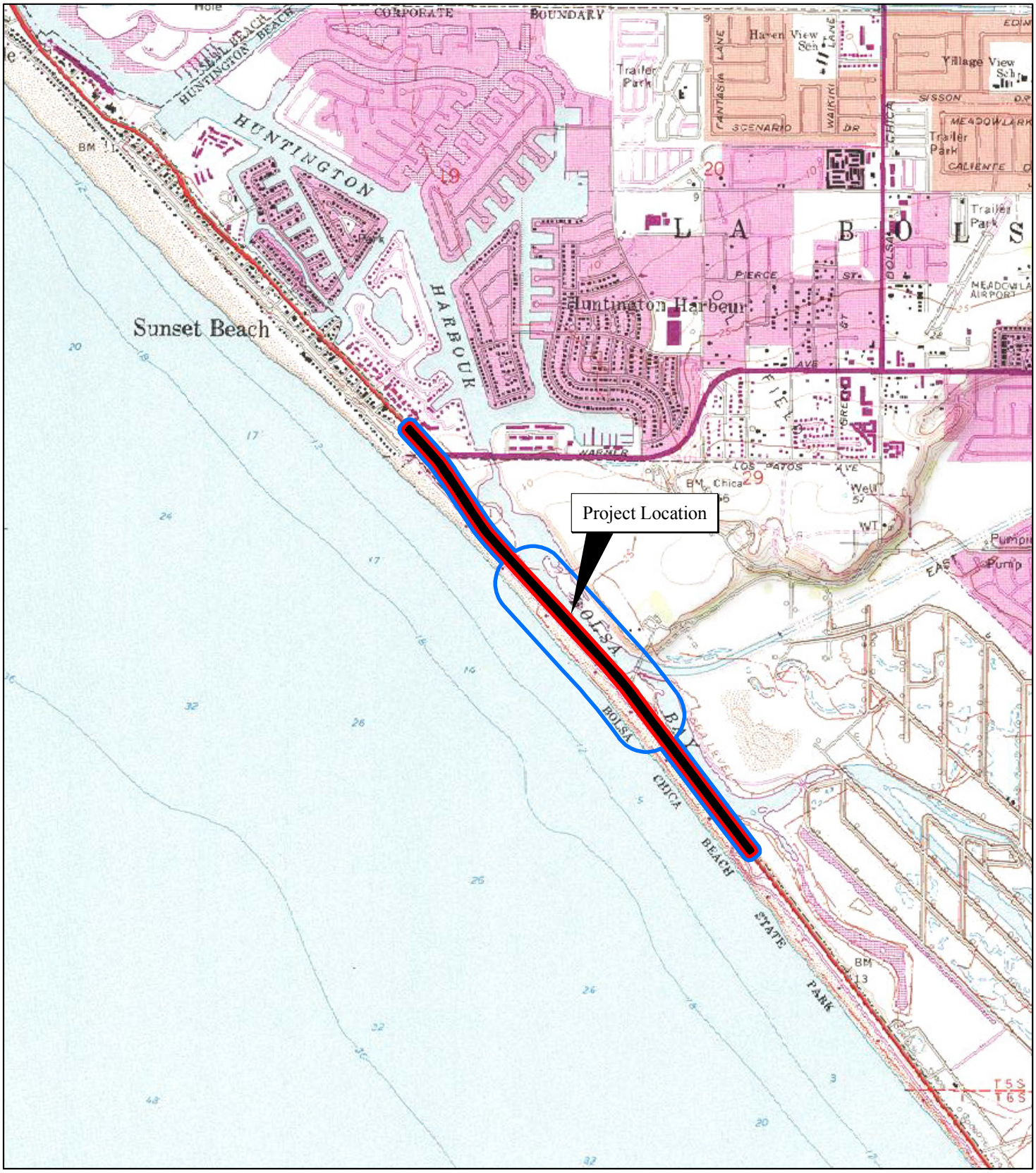

FIGURE 2

LEGEND

- Project Location
- Biological Study Area (50' buffer)
- Wildlife Survey Area (500' buffer)

N

0 1000 2000
FEET

SOURCE: USGS 7.5' QUAD - SEAL BEACH ('81); CALIF.

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SR-1 Bolsa Chica Roadway Embankment Reconstruction Project

Project Location Map

12-ORA-1 PM 28.7/29.7
EA 0K0100

Preconstruction: View of eroding pavement along the road to the east of SR-1, facing south (07.14.09)

Preconstruction: View of SR-1 shoulder, facing south; estuarine wetland vegetation to be removed (07.27.09).

Preconstruction: View of SR-1 shoulder, facing north; estuarine wetland vegetation to be removed (07.27.09).

Postconstruction: View of SR-1 shoulder, facing south, after installation of sheet piling and associated back-fill (08.11.09).

Postconstruction: View of SR-1 shoulder, facing north, after installation of sheet piling and associated back fill (08.11.09).

Postconstruction: View of SR-1 shoulder, facing south, after installation of temporary K-rail (03.05.10).

FIGURE 3

SR-1 Bolsa Chica Roadway Embankment Reconstruction Project

Pre-and Postconstruction Photos

12-Ora-1

PM 28.7-29.7

EA 0K0100

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LEGEND

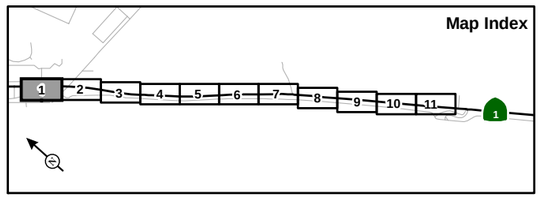
- Biological Study Area
- CCC Wetlands only
- Corps Section 404/CCC Wetlands
- Corps Section 404/CCC Deepwater Aquatic
- Sample Pit (with ID)
- Corps Section 10 Waters

Impact Areas

- Permanent Impact
- Temporary Impact
- Temporary Crash Cushion
- Temporary K-rail/Permanent Metal Beam Guardrail*
- Sheet Piling / Permanently Restore Embankment and Shoulder*

*Maximum Work Limits

0 25 50
FEET



SOURCE: Aerial - MSVE (2008); Aerial and CAD - Caltrans (04/09/2009)

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FIGURE 4
Sheet 1 of 11

SR-1 Bolsa Chica Roadway Embankment Reconstruction Project

Potential Corps/CCC Jurisdiction and Proposed Impacts

12-Ora-1
PM 28.7-29.7
EA 0K0100

LEGEND

- Biological Study Area
- CCC Wetlands only
- Corps Section 404/CCC Wetlands
- Corps Section 404/CCC Deepwater Aquatic
- Sample Pit (with ID)
- Corps Section 10 Waters

Impact Areas

- Permanent Impact
- Temporary Impact
- Temporary Crash Cushion
- Temporary K-rail/Permanent Metal Beam Guardrail*
- Sheet Piling / Permanently Restore Embankment and Shoulder*

*Maximum Work Limits

0 25 50
FEET

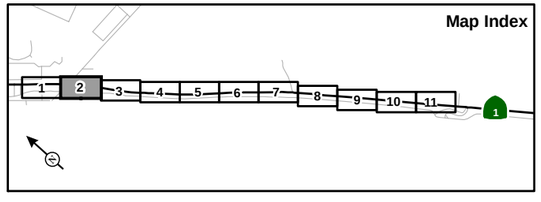

FIGURE 4
Sheet 2 of 11

SR-1 Bolsa Chica Roadway Embankment Reconstruction Project
Potential Corps/CCC Jurisdiction and Proposed Impacts
12-Ora-1
PM 28.7-29.7
EA 0K0100

SOURCE: Aerial - MSVE (2008); Aerial and CAD - Caltrans (04/09/2009)

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LEGEND

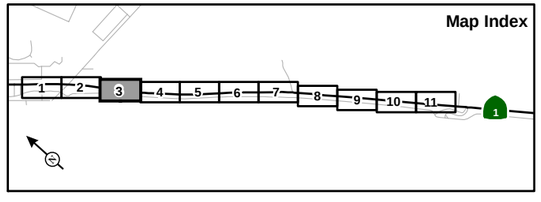
- Biological Study Area
- CCC Wetlands only
- Corps Section 404/CCC Wetlands
- Corps Section 404/CCC Deepwater Aquatic
- Sample Pit (with ID)
- Corps Section 10 Waters

Impact Areas

- Permanent Impact
- Temporary Impact
- Temporary Crash Cushion
- Temporary K-rail/Permanent Metal Beam Guardrail*
- Sheet Piling / Permanently Restore Embankment and Shoulder*

*Maximum Work Limits

0 25 50
FEET



SOURCE: Aerial - MSVE (2008); Aerial and CAD - Caltrans (04/09/2009)

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FIGURE 4
Sheet 3 of 11

SR-1 Bolsa Chica Roadway Embankment Reconstruction Project

Potential Corps/CCC Jurisdiction and Proposed Impacts

12-Ora-1
PM 28.7-29.7
EA 0K0100

LEGEND

- Biological Study Area
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- Corps Section 10 Waters

Impact Areas

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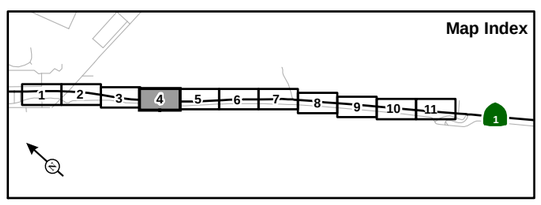
- Temporary Crash Cushion
- Temporary K-rail/Permanent Metal Beam Guardrail*
- Sheet Piling / Permanently Restore Embankment and Shoulder*

*Maximum Work Limits

0 25 50
FEET



SOURCE: Aerial - MSVE (2008); Aerial and CAD - Caltrans (04/09/2009)

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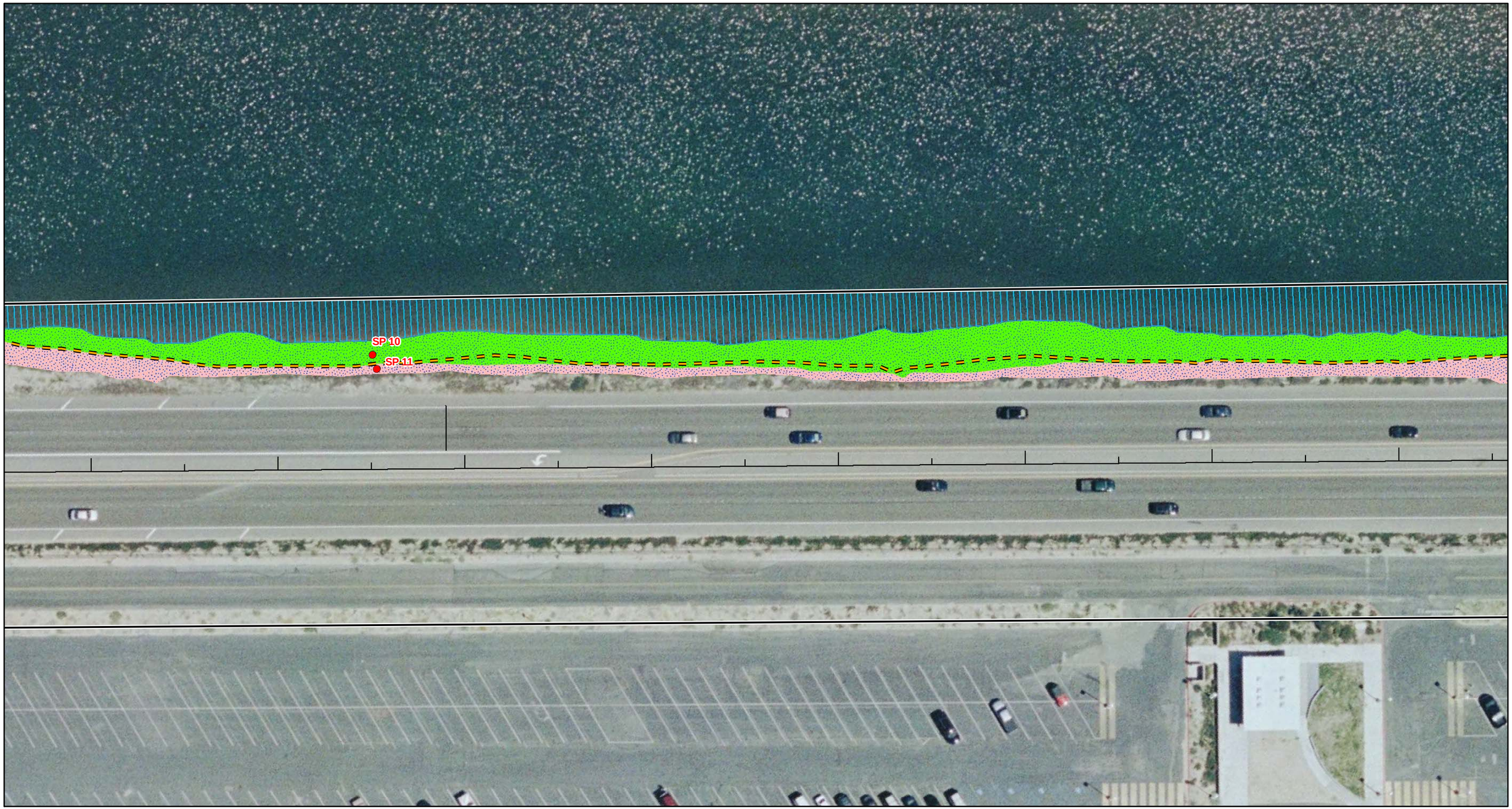
FIGURE 4
Sheet 4 of 11

SR-1 Bolsa Chica Roadway Embankment Reconstruction Project

Potential Corps/CCC Jurisdiction and Proposed Impacts

12-Ora-1
PM 28.7-29.7
EA 0K0100



LEGEND

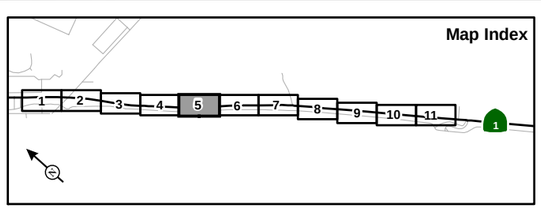
- Biological Study Area
- CCC Wetlands only
- Corps Section 404/CCC Wetlands
- Corps Section 404/CCC Deepwater Aquatic
- Sample Pit (with ID)
- Corps Section 10 Waters

Impact Areas

- Permanent Impact
- Temporary Impact
- Temporary Crash Cushion
- Temporary K-rail/Permanent Metal Beam Guardrail*
- Sheet Piling / Permanently Restore Embankment and Shoulder*

*Maximum Work Limits

0 25 50
FEET



SOURCE: Aerial - MSVE (2008); Aerial and CAD - Caltrans (04/09/2009)

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FIGURE 4
Sheet 5 of 11

SR-1 Bolsa Chica Roadway Embankment Reconstruction Project

Potential Corps/CCC Jurisdiction and Proposed Impacts

12-Ora-1
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LEGEND

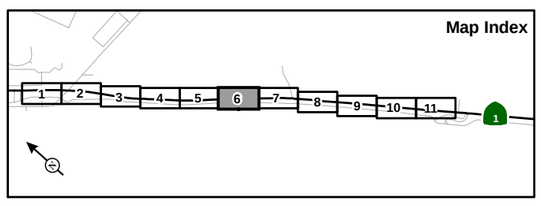
- Biological Study Area
- CCC Wetlands only
- Corps Section 404/CCC Wetlands
- Corps Section 404/CCC Deepwater Aquatic
- Sample Pit (with ID)
- Corps Section 10 Waters

Impact Areas

- Permanent Impact
- Temporary Impact
- Temporary Crash Cushion
- Temporary K-rail/Permanent Metal Beam Guardrail*
- Sheet Piling / Permanently Restore Embankment and Shoulder*

*Maximum Work Limits

0 25 50
FEET



SOURCE: Aerial - MSVE (2008); Aerial and CAD - Caltrans (04/09/2009)

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FIGURE 4
Sheet 6 of 11

SR-1 Bolsa Chica Roadway Embankment Reconstruction Project
Potential Corps/CCC Jurisdiction and Proposed Impacts
12-Ora-1
PM 28.7-29.7
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SP 12

LEGEND

- Biological Study Area
- CCC Wetlands only
- Corps Section 404/CCC Wetlands
- Corps Section 404/CCC Deepwater Aquatic
- Sample Pit (with ID)
- Corps Section 10 Waters

Impact Areas

- Permanent Impact
- Temporary Impact
- Temporary Crash Cushion
- Temporary K-rail/Permanent Metal Beam Guardrail*
- Sheet Piling / Permanently Restore Embankment and Shoulder*

*Maximum Work Limits

0 25 50
FEET

SOURCE: Aerial - MSVE (2008); Aerial and CAD - Caltrans (04/09/2009)

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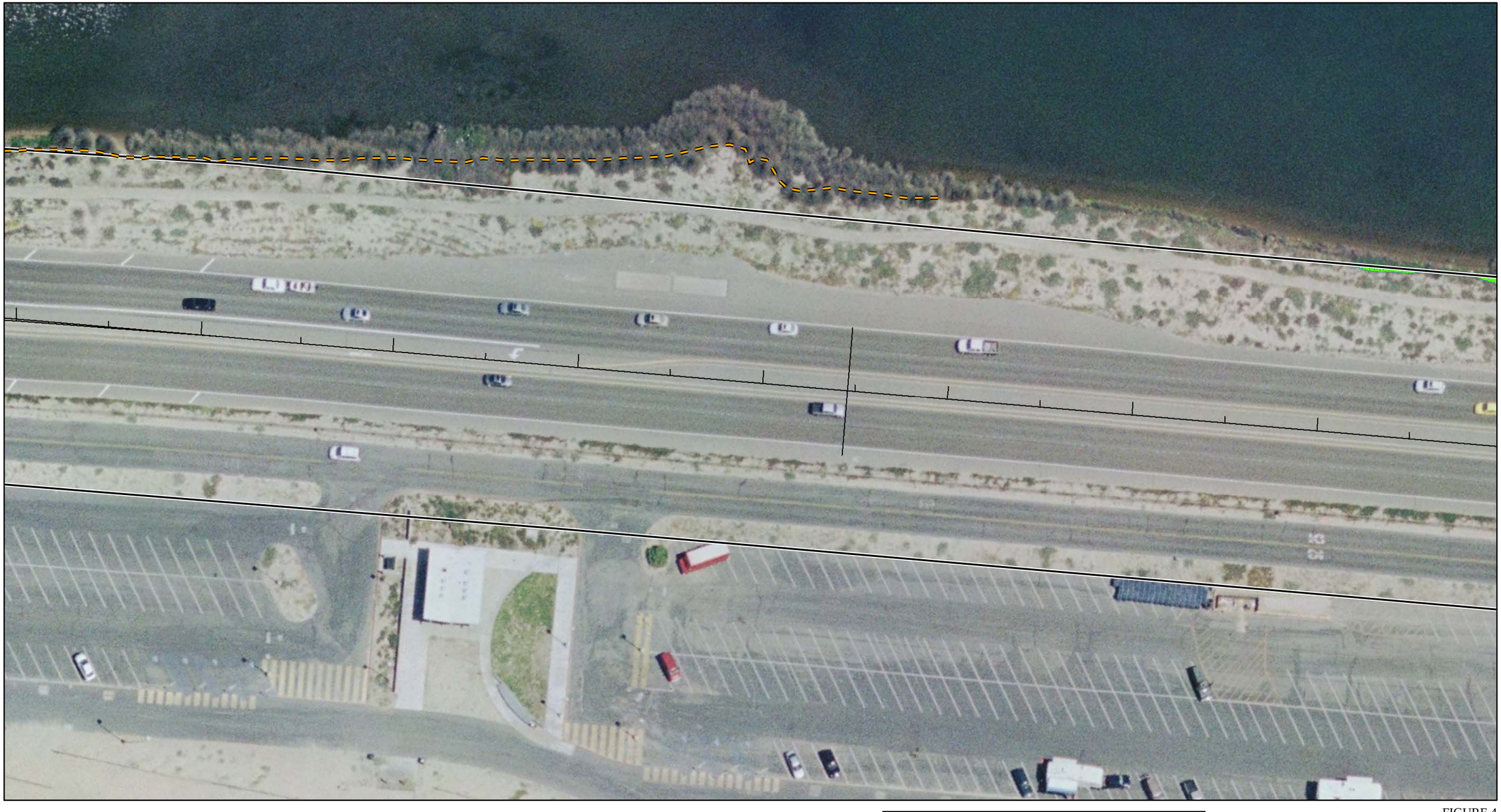
Map Index

1 2 3 4 5 6 7 8 9 10 11 1

FIGURE 4
Sheet 7 of 11

SR-1 Bolsa Chica Roadway Embankment Reconstruction Project
Potential Corps/CCC Jurisdiction and Proposed Impacts
12-Ora-1
PM 28.7-29.7
EA 0K0100



LEGEND

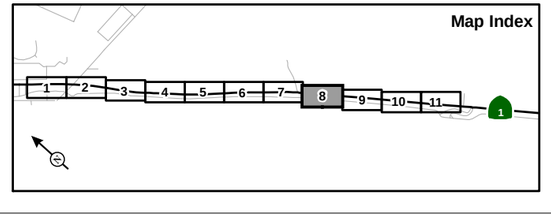
- Biological Study Area
- CCC Wetlands only
- Corps Section 404/CCC Wetlands
- Corps Section 404/CCC Deepwater Aquatic
- Sample Pit (with ID)
- Corps Section 10 Waters

Impact Areas

- Permanent Impact
- Temporary Impact
- Temporary Crash Cushion
- Temporary K-rail/Permanent Metal Beam Guardrail*
- Sheet Piling / Permanently Restore Embankment and Shoulder*

*Maximum Work Limits

0 25 50
FEET



SOURCE: Aerial - MSVE (2008); Aerial and CAD - Caltrans (04/09/2009)

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FIGURE 4
Sheet 8 of 11

SR-1 Bolsa Chica Roadway Embankment Reconstruction Project
Potential Corps/CCC Jurisdiction and Proposed Impacts
12-Ora-1
PM 28.7-29.7
EA 0K0100

LEGEND

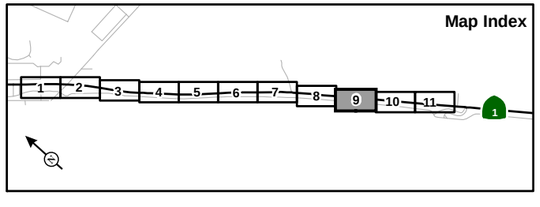
- Biological Study Area
- CCC Wetlands only
- Corps Section 404/CCC Wetlands
- Corps Section 404/CCC Deepwater Aquatic
- Sample Pit (with ID)
- Corps Section 10 Waters

Impact Areas

- Permanent Impact
- Temporary Impact
- Temporary Crash Cushion
- Temporary K-rail/Permanent Metal Beam Guardrail*
- Sheet Piling / Permanently Restore Embankment and Shoulder*

*Maximum Work Limits

0 25 50
FEET



SOURCE: Aerial - MSVE (2008); Aerial and CAD - Caltrans (04/09/2009)

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FIGURE 4
Sheet 9 of 11

SR-1 Bolsa Chica Roadway Embankment Reconstruction Project
Potential Corps/CCC Jurisdiction and Proposed Impacts

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PM 28.7-29.7
EA 0K0100

LEGEND

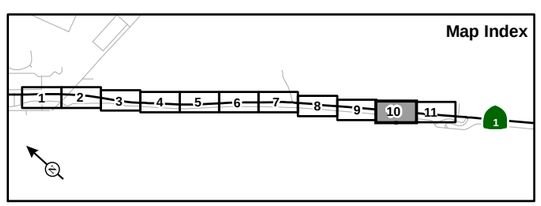
- Biological Study Area
- CCC Wetlands only
- Corps Section 404/CCC Wetlands
- Corps Section 404/CCC Deepwater Aquatic
- Sample Pit (with ID)
- Corps Section 10 Waters

Impact Areas

- Permanent Impact
- Temporary Impact
- Temporary Crash Cushion
- Temporary K-rail/Permanent Metal Beam Guardrail*
- Sheet Piling / Permanently Restore Embankment and Shoulder*

*Maximum Work Limits

0 25 50
FEET



SOURCE: Aerial - MSVE (2008); Aerial and CAD - Caltrans (04/09/2009)

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FIGURE 4
Sheet 10 of 11

SR-1 Bolsa Chica Roadway Embankment Reconstruction Project

Potential Corps/CCC Jurisdiction and Proposed Impacts

12-Ora-1
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EA 0K0100

LEGEND

- Biological Study Area
- CCC Wetlands only
- Corps Section 404/CCC Wetlands
- Corps Section 404/CCC Deepwater Aquatic
- Sample Pit (with ID)
- Corps Section 10 Waters

Impact Areas

- Permanent Impact
- Temporary Impact
- Temporary Crash Cushion
- Temporary K-rail/Permanent Metal Beam Guardrail*
- Sheet Piling / Permanently Restore Embankment and Shoulder*

*Maximum Work Limits

0 25 50
FEET

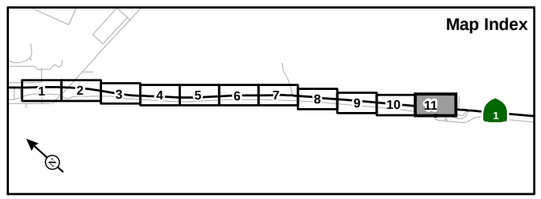

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FIGURE 4
Sheet 11 of 11

SR-1 Bolsa Chica Roadway Embankment Reconstruction Project

Potential Corps/CCC Jurisdiction and Proposed Impacts

12-Ora-1
PM 28.7-29.7
EA 0K0100

LEGEND

- Biological Study Area

Vegetation Communities

- Bare Ground
- Coastal Scrub
- Disturbed
- Dune Scrub
- Estuarine Wetland/Open Water
- Exotic Annual Grassland
- Invaded Dune Mat
- Invaded, Ice Plant Dune Mat
- Native Dune Mat
- Transportation/Road
- Locations of Coast woolly heads (*Nemacaulis denudata*) CNPS 1B
- Locations of Estuary Seablight (*Sueada esteroa* var. *denudata*) CNPS 1B

Impact Areas

- Permanent Impact
- Temporary Impact
- Temporary Crash Cushion
- Temporary K-rail/Permanent Metal Beam Guardrail*
- Sheet Piling / Permanently Restore Embankment and Shoulder*

*Maximum Work Limits

0 25 50
FEET

SOURCE: MSVE (2008); EagleAerial (3/24/08)

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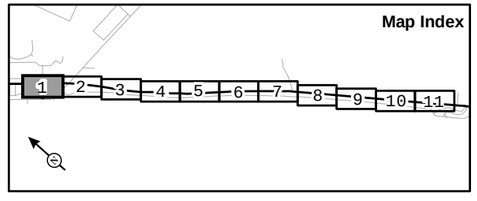

FIGURE 5
Sheet 1 of 11

SR-1 Bolsa Chica Roadway Embankment Reconstruction Project

Vegetation Map and Proposed Impacts

12-Ora-1
PM 28.7-29.7
EA 0K0100

LEGEND

- Biological Study Area

Vegetation Communities

- Bare Ground
- Coastal Scrub
- Disturbed
- Dune Scrub
- Estuarine Wetland/Open Water
- Exotic Annual Grassland
- Invaded Dune Mat
- Invaded, Ice Plant Dune Mat
- Native Dune Mat
- Transportation/Road
- Locations of Coast woolly heads (*Nemacaulis denudata*) CNPS 1B
- Locations of Estuary Seablight (*Sueada esteroa* var. *denudata*) CNPS 1B

Impact Areas

- Permanent Impact
- Temporary Impact
- Temporary Crash Cushion
- Temporary K-rail/Permanent Metal Beam Guardrail*
- Sheet Piling / Permanently Restore Embankment and Shoulder*

*Maximum Work Limits

0 25 50
FEET

SOURCE: MSVE (2008); EagleAerial (3/24/08)

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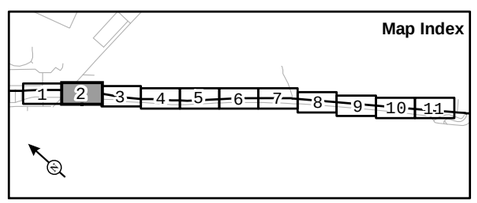

FIGURE 5
Sheet 2 of 11

SR-1 Bolsa Chica Roadway Embankment Reconstruction Project

Vegetation Map and Proposed Impacts

12-Ora-1
PM 28.7-29.7
EA 0K0100

LEGEND

- Biological Study Area

Vegetation Communities

- Bare Ground
- Coastal Scrub
- Disturbed
- Dune Scrub
- Estuarine Wetland/Open Water
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- Invaded Dune Mat
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- Native Dune Mat
- Transportation/Road
- Locations of Coast woolly heads (*Nemacaulis denudata*) CNPS 1B
- Locations of Estuary Seablight (*Sueada esteroa* var. *denudata*) CNPS 1B

Impact Areas

- Permanent Impact
- Temporary Impact
- Temporary Crash Cushion
- Temporary K-rail/Permanent Metal Beam Guardrail*
- Sheet Piling / Permanently Restore Embankment and Shoulder*

*Maximum Work Limits

0 25 50
FEET

SOURCE: MSVE (2008); EagleAerial (3/24/08)

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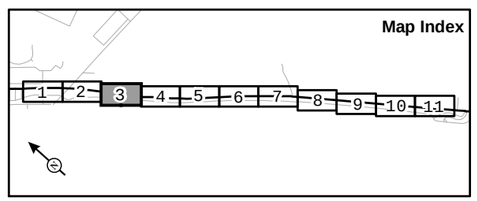


FIGURE 5
Sheet 3 of 11

SR-1 Bolsa Chica Roadway Embankment Reconstruction Project

Vegetation Map and Proposed Impacts

12-Ora-1
PM 28.7-29.7
EA 0K0100

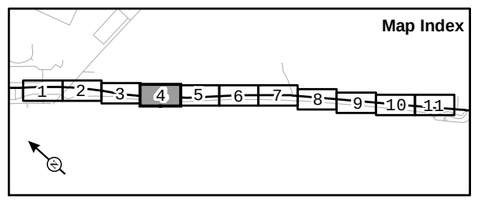
LEGEND

- Biological Study Area
- Vegetation Communities
  - Bare Ground
  - Coastal Scrub
  - Disturbed
  - Dune Scrub
  - Estuarine Wetland/Open Water
  - Exotic Annual Grassland
  - Invaded Dune Mat
  - Invaded, Ice Plant Dune Mat
  - Native Dune Mat
  - Transportation/Road
- Locations of Coast woolly heads (*Nemacaulis denudata*) CNPS 1B
- Locations of Estuary Seablight (*Sueada esteroa* var. *denudata*) CNPS 1B
- Impact Areas
  - Permanent Impact
  - Temporary Impact
- Temporary Crash Cushion
- Temporary K-rail/Permanent Metal Beam Guardrail*
- Sheet Piling / Permanently Restore Embankment and Shoulder*

*Maximum Work Limits

0 25 50
FEET

Map Index



SOURCE: MSVE (2008); EagleAerial (3/24/08)

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FIGURE 5
Sheet 4 of 11

SR-1 Bolsa Chica Roadway Embankment Reconstruction Project

Vegetation Map and Proposed Impacts

12-Ora-1
PM 28.7-29.7
EA 0K0100

LEGEND

- Biological Study Area

Vegetation Communities

- Bare Ground
- Coastal Scrub
- Disturbed
- Dune Scrub
- Estuarine Wetland/Open Water
- Exotic Annual Grassland
- Invaded Dune Mat
- Invaded, Ice Plant Dune Mat
- Native Dune Mat
- Transportation/Road
- Locations of Coast woolly heads (*Nemacaulis denudata*) CNPS 1B
- Locations of Estuary Seablight (*Sueada esteroa* var. *denudata*) CNPS 1B

Impact Areas

- Permanent Impact
- Temporary Impact
- Temporary Crash Cushion
- Temporary K-rail/Permanent Metal Beam Guardrail*
- Sheet Piling / Permanently Restore Embankment and Shoulder*

*Maximum Work Limits

0 25 50
FEET

SOURCE: MSVE (2008); EagleAerial (3/24/08)

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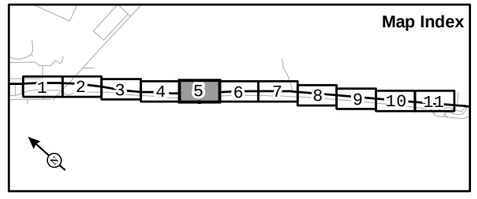
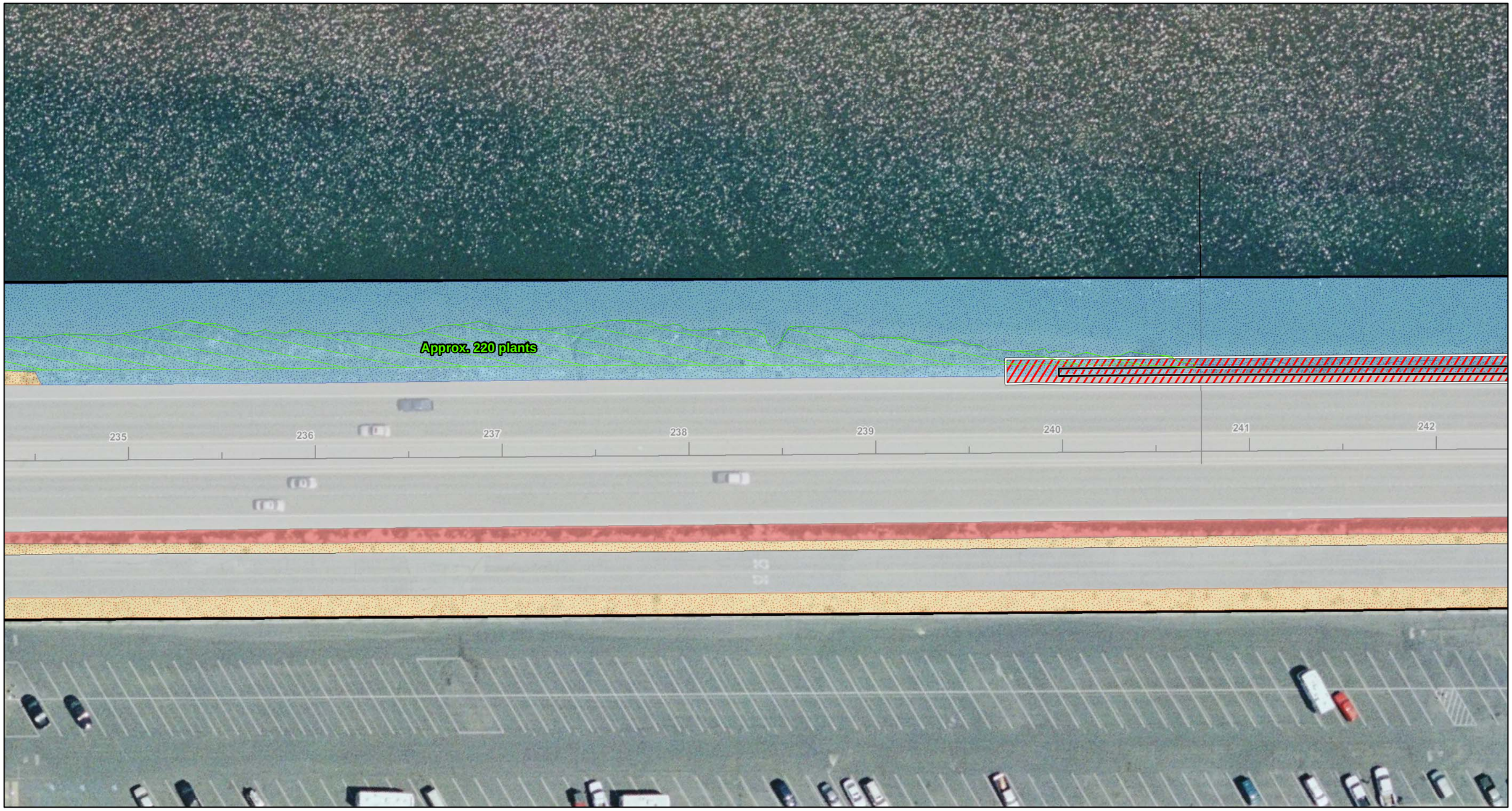


FIGURE 5
Sheet 5 of 11

SR-1 Bolsa Chica Roadway Embankment Reconstruction Project

Vegetation Map and Proposed Impacts

12-Ora-1
PM 28.7-29.7
EA 0K0100



LEGEND

Biological Study Area

Vegetation Communities

- Bare Ground
- Coastal Scrub
- Disturbed
- Dune Scrub
- Estuarine Wetland/Open Water
- Exotic Annual Grassland
- Invaded Dune Mat
- Invaded, Ice Plant Dune Mat
- Native Dune Mat
- Transportation/Road

- Locations of Coast woolly heads (*Nemacaulis denudata*) CNPS 1B
- Locations of Estuary Seablight (*Sueada esteroa* var. *denudata*) CNPS 1B

Impact Areas

- Permanent Impact
- Temporary Impact
- Temporary Crash Cushion
- Temporary K-rail/Permanent Metal Beam Guardrail*
- Sheet Piling / Permanently Restore Embankment and Shoulder*

*Maximum Work Limits

0 25 50
FEET

SOURCE: MSVE (2008); EagleAerial (3/24/08)

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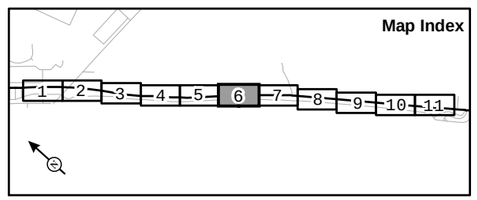

FIGURE 5
Sheet 6 of 11

SR-1 Bolsa Chica Roadway Embankment Reconstruction Project

Vegetation Map and Proposed Impacts

12-Ora-1
PM 28.7-29.7
EA 0K0100

LEGEND

- Biological Study Area
- Vegetation Communities
  - Bare Ground
  - Coastal Scrub
  - Disturbed
  - Dune Scrub
  - Estuarine Wetland/Open Water
  - Exotic Annual Grassland
  - Invaded Dune Mat
  - Invaded, Ice Plant Dune Mat
  - Native Dune Mat
  - Transportation/Road
- Locations of Coast woolly heads (*Nemacaulis denudata*) CNPS 1B
- Locations of Estuary Seablight (*Sueada esteroa* var. *denudata*) CNPS 1B
- Impact Areas
  - Permanent Impact
  - Temporary Impact
- Temporary Crash Cushion
- Temporary K-rail/Permanent Metal Beam Guardrail*
- Sheet Piling / Permanently Restore Embankment and Shoulder*

*Maximum Work Limits

0 25 50
FEET

SOURCE: MSVE (2008); EagleAerial (3/24/08)

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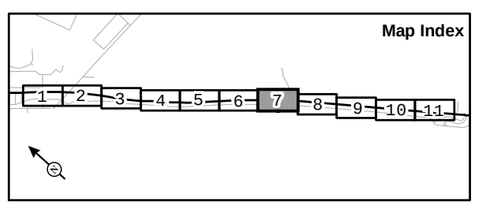

FIGURE 5
Sheet 7 of 11

SR-1 Bolsa Chica Roadway Embankment Reconstruction Project

Vegetation Map and Proposed Impacts

12-Ora-1
PM 28.7-29.7
EA 0K0100

LEGEND

- Biological Study Area

Vegetation Communities

- Bare Ground
- Coastal Scrub
- Disturbed
- Dune Scrub
- Estuarine Wetland/Open Water
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- Invaded Dune Mat
- Invaded, Ice Plant Dune Mat
- Native Dune Mat
- Transportation/Road
- Locations of Coast woolly heads (*Nemacaulis denudata*) CNPS 1B
- Locations of Estuary Seablight (*Sueada esteroa* var. *denudata*) CNPS 1B

Impact Areas

- Permanent Impact
- Temporary Impact
- Temporary Crash Cushion
- Temporary K-rail/Permanent Metal Beam Guardrail*
- Sheet Piling / Permanently Restore Embankment and Shoulder*

*Maximum Work Limits

0 25 50
FEET

SOURCE: MSVE (2008); EagleAerial (3/24/08)

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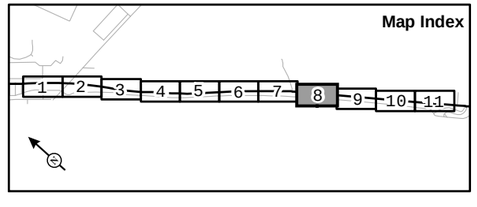

FIGURE 5
Sheet 8 of 11

SR-1 Bolsa Chica Roadway Embankment Reconstruction Project

Vegetation Map and Proposed Impacts

12-Ora-1
PM 28.7-29.7
EA 0K0100

LEGEND

- Biological Study Area

Vegetation Communities

- Bare Ground
- Coastal Scrub
- Disturbed
- Dune Scrub
- Estuarine Wetland/Open Water
- Exotic Annual Grassland
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- Invaded, Ice Plant Dune Mat
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- Locations of Coast woolly heads (*Nemacaulis denudata*) CNPS 1B
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Impact Areas

- Permanent Impact
- Temporary Impact
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- Temporary K-rail/Permanent Metal Beam Guardrail*
- Sheet Piling / Permanently Restore Embankment and Shoulder*

*Maximum Work Limits

0 25 50
FEET

SOURCE: MSVE (2008); EagleAerial (3/24/08)

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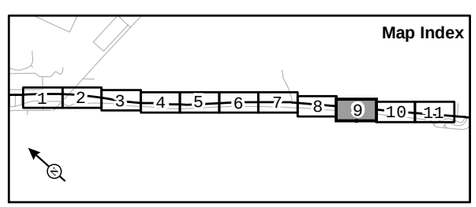
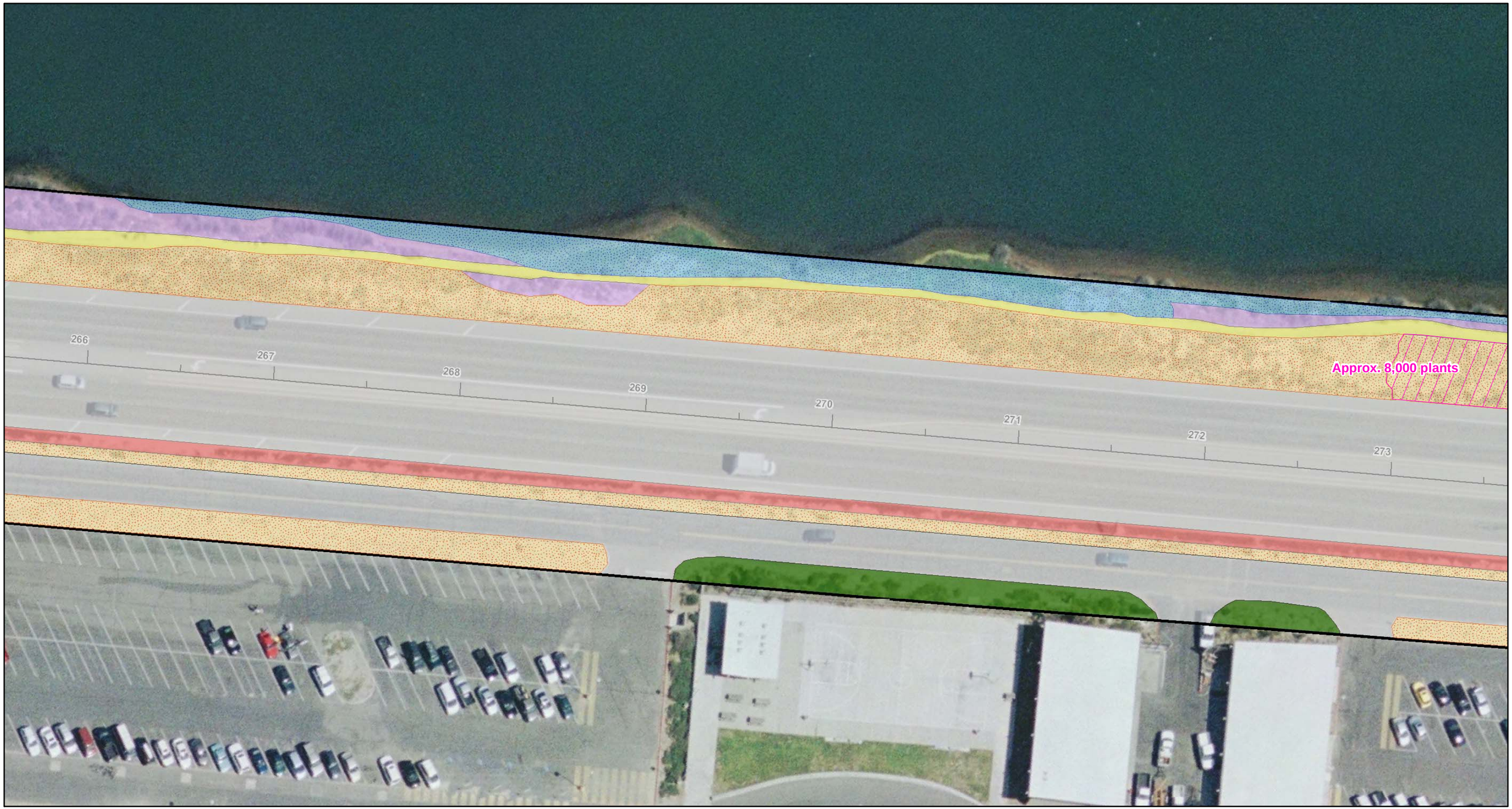


FIGURE 5
Sheet 9 of 11

SR-1 Bolsa Chica Roadway Embankment Reconstruction Project

Vegetation Map and Proposed Impacts

12-Ora-1
PM 28.7-29.7
EA 0K0100



LEGEND

- Biological Study Area

Vegetation Communities

- Bare Ground
- Coastal Scrub
- Disturbed
- Dune Scrub
- Estuarine Wetland/Open Water
- Exotic Annual Grassland
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- Invaded, Ice Plant Dune Mat
- Native Dune Mat
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- Locations of Estuary Seablight (*Sueada esteroa* var. *denudata*) CNPS 1B

Impact Areas

- Permanent Impact
- Temporary Impact
- Temporary Crash Cushion
- Temporary K-rail/Permanent Metal Beam Guardrail*
- Sheet Piling / Permanently Restore Embankment and Shoulder*

*Maximum Work Limits

0 25 50
FEET

SOURCE: MSVE (2008); EagleAerial (3/24/08)

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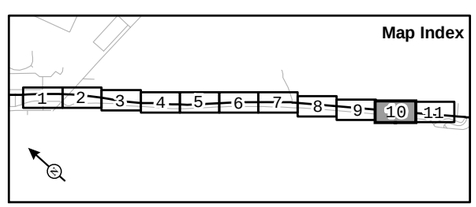

FIGURE 5
Sheet 10 of 11

SR-1 Bolsa Chica Roadway Embankment Reconstruction Project

Vegetation Map and Proposed Impacts

12-Ora-1
PM 28.7-29.7
EA 0K0100

LEGEND

- Biological Study Area

Vegetation Communities

- Bare Ground
- Coastal Scrub
- Disturbed
- Dune Scrub
- Estuarine Wetland/Open Water
- Exotic Annual Grassland
- Invaded Dune Mat
- Invaded, Ice Plant Dune Mat
- Native Dune Mat
- Transportation/Road
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- Locations of Estuary Seablight (*Sueada esteroa* var. *denudata*) CNPS 1B

Impact Areas

- Permanent Impact
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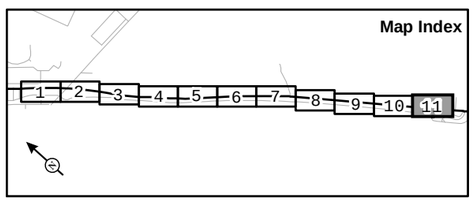
- Temporary Crash Cushion
- Temporary K-rail/Permanent Metal Beam Guardrail*
- Sheet Piling / Permanently Restore Embankment and Shoulder*

*Maximum Work Limits

0 25 50
FEET

Map Index



SOURCE: MSVE (2008); EagleAerial (3/24/08)

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FIGURE 5
Sheet 11 of 11

SR-1 Bolsa Chica Roadway Embankment Reconstruction Project

Vegetation Map and Proposed Impacts

12-Ora-1
PM 28.7-29.7
EA 0K0100

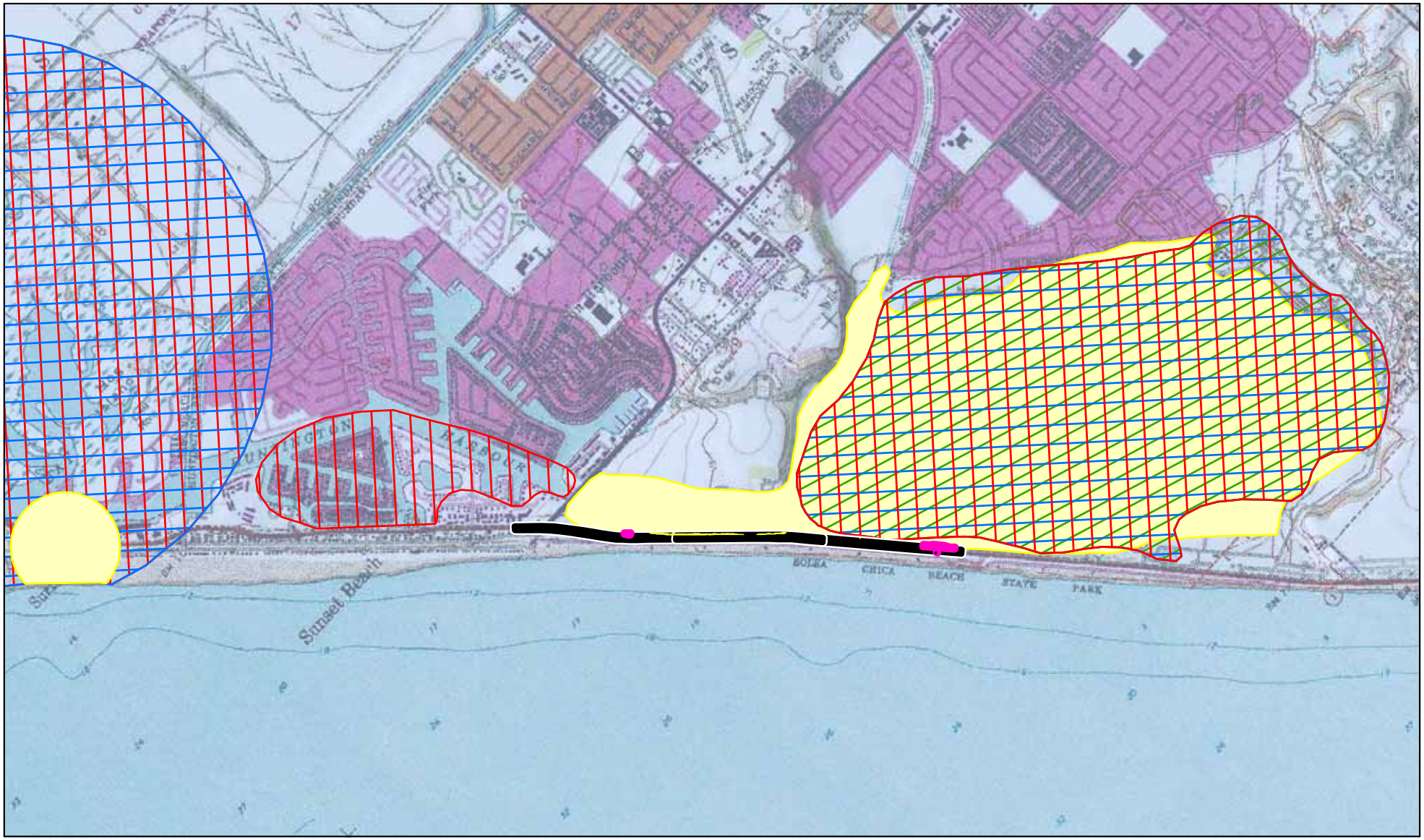

FIGURE 6

LEGEND

Project Location

Sensitive Species

*Coast wooly heads (*Nemacaulis denudata* var. *denudata*) CNPS 1B

Coulter's Goldfields (*Lasthenia glabrata* ssp. *coulteri*) CNPS 1B

Salt Marsh Bird's-beak (*Cordylanthus maritimus* ssp. *maritimus*) FE/SE/CNPS 1B

Ventura Marsh Milk-vetch (*Astragalus pycnostachyus* var. *lanosissimus*) FE/SE/CNPS 1B

Coulter's Saltbush (*Atriplex coulteri*) CNPS 1B

*Estuary Seablite (*Suaeda esteroa*) CNPS 1B

* Present within the BSA

0 1250 2500
FEET

SOURCE: USFWS NWI (2009)

SR-1 Bolsa Chica Roadway Embankment Reconstruction Project

CNDDB Special-Status Plant Species Occurrences

12-ORA-1 PM 28.7/29.7
EA 0K0100

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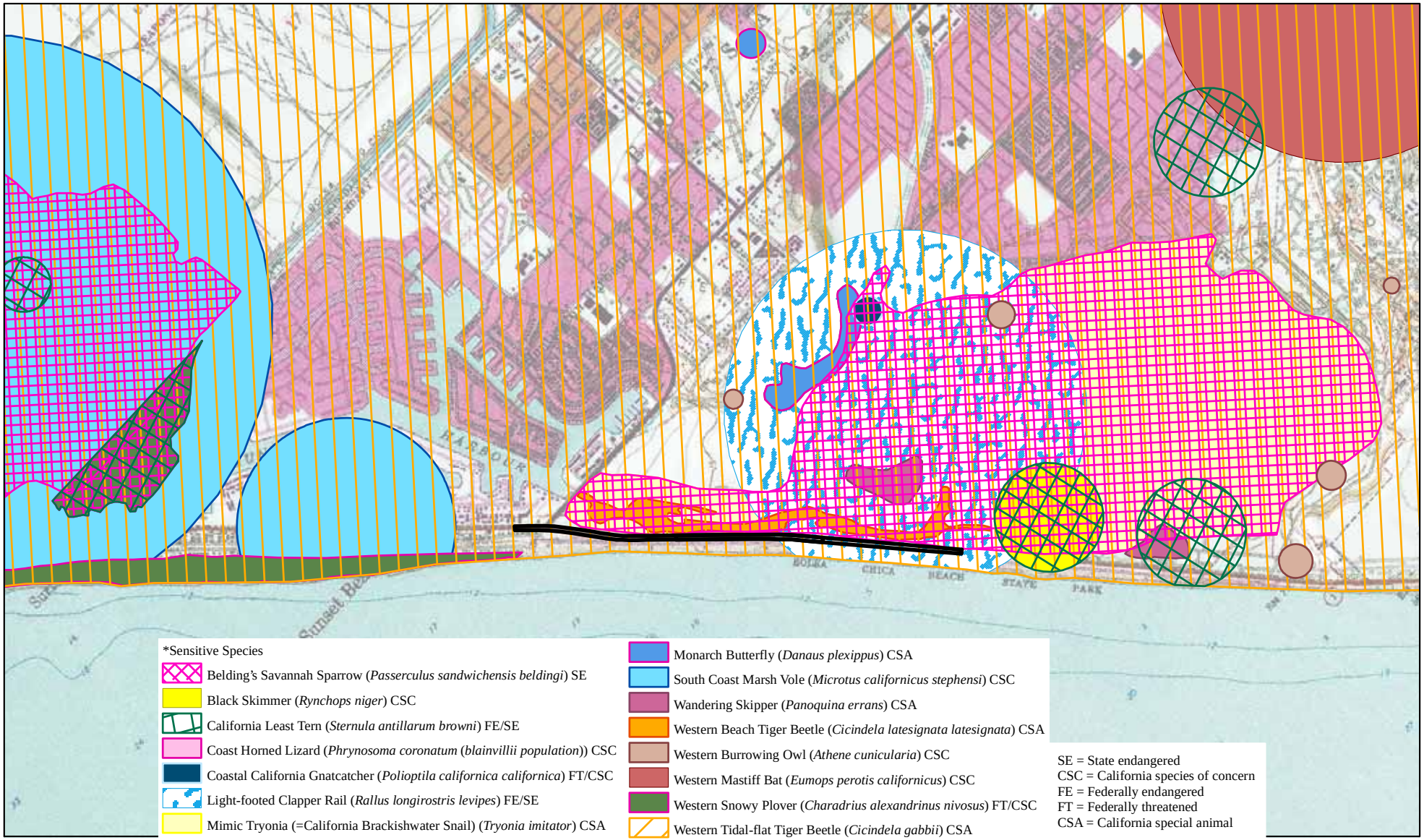

FIGURE 7

LEGEND

Project Location

* For Sensitive Species please see above

0 1250 2500
FEET

SOURCE: USFWS NWI (2009)

I:\CDT0901\GIS\CNDDB_animals.mxd (7/30/2009)

SR-1 Bolsa Chica Roadway Embankment Reconstruction Project

CNDDB Sensitive Animal Species

12-ORA-1 PM 28.7/29.7
EA 0K0100

FIGURE 8

LEGEND

Project Location

Nest Areas

Species	Location	Nests
Belding's Savannah Sparrow *(Passerculus sandwichensis beldingi)*	Surrounding pickleweed habitat (Not within nest areas)	Present and nesting (count unavailable)
Black Skimmer *(Rhynchops niger)*	NI, NS1	50 nests
Caspian Tern *(Hydroprogne caspia)*	NI, NS1	30 nests
Elegant Tern *(Sterna elegans)*	NI, NS1	4,000-5,000
Least Tern *(Sternula antillarum)*	SI, NS1	319 nests
Royal Tern *(Sterna maximus)*	NI, NS1	Present and nesting (count unavailable)
Snowy Plover *(Chardrius alexandrinus nivosus)*	NI, NS1, NS2, NS3	68 nests

0 500 1000
FEET

SOURCE: Digital Globe (2008)

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SR-1 Bolsa Chica Roadway Embankment Reconstruction Project

Nesting Site Occurrences

12-ORA-1 PM 28.7/29.7
EA 0K0100